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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/708,606	03/15/2004	Stanislaus A. Knez	030735/KEL105A	2605

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EXAMINER	
PATEL, VINIT H	

ART UNIT	PAPER NUMBER
1764	

DATE MAILED: 09/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/708,606	KNEZ ET AL.	
	Examiner	Art Unit	
	Vinit H. Patel	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 June 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14 and 22-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14 and 22-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant argues, inter alia, that LeBlanc, US Patent No. 5,362,454 does not teach or suggest a partial oxidation reformer, but rather an autothermal reformer. As evidenced by Beer, US Patent No. 5,755,840, it is noted that one skilled in the art would recognize that an auto-thermal (ATR) reformer is also referred to as a partial oxidation reformer (C1/L15-24). Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of a new ground(s) for rejection.

Claim Objections

Claims 1, 14 and 25 are objected to because of the following informalities: grammatically correct English requires that "and" be present following the last semi-colon ";" in line 11 of claim 1, in line 14 of claim 14, and in line 12 of claim 25, as the claims as written are awkward to read. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claim 14 is rejected under 35 U.S.C. 102(e) as being anticipated by Wang et al., US Patent Appl. 2003/0162846 A1.

Regarding claim 14, Wang teaches an apparatus for producing syngas ([0003]) comprising partial oxidation reactor means 12; means for cooling ([0090]); means for supplying the reactor effluent ([0090]); means for passing a second hydrocarbon portion with steam through a catalyst zone in a reforming exchanger ([0090-0092]); means for discharging the second reactor effluent from the catalyst zone to form an admixture with the first reactor effluent ([0090-0092]); means for passing the admixture across the catalyst zone in indirect heat exchange ([0090-0092]); and means for collecting the cooled admixture ([0090-0092]; Fig. 1).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-13 and 22-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al., US Patent Appl. 2003/0162846 A1.

Regarding claim 1, Wang teaches a process for preparing syngas comprising partially oxidizing a first portion of hydrocarbon 4 with oxygen 18 in a partial oxidation reactor 12; cooling the first reactor effluent; supplying the effluent to a reforming exchanger; passing a second hydrocarbon portion 6 with steam 32 though the catalyst zone of a reforming exchanger 30; discharging the second reactor effluent from the catalyst zone to form an admixture with the first reactor effluent; passing the admixture across the catalyst zone in indirect heat exchange therewith to cool the admixture and

heat the catalyst zone; collecting the cooled admixture from the from the reforming exchanger ([0089-0092]; Fig. 1).

Wang further teaches that it is advantageous to reduce the temperature of the exothermically generated syngas ([0040-0042]), but does not teach cooling the first reactor effluent to 650 –1000 C. However it would have been obvious to one of ordinary skill in the art at the time of the invention to cool the first reactor effluent to 650 –1000 C as such a modification is a result effective variable, where one skilled in the art would recognize to optimize a process variable by routine experimentation, for example in this case, to control the generated syngas temperature to avoid mechanical integrity problems and improve process operability by reducing the temperature of exothermically generated syngas prior to further processing ([0042]). See In re Boesch, 617 F.2d 272, 276 (CCPA 1980); MPEP 2144.05.

Regarding claim 2, Wang teaches direct heat exchange with water introduced into the first reactor effluent [0040].

Regarding claims 3 and 5, Wang teaches the first reactor effluent is further cooled by indirect heat exchange ([0091]).

Regarding claim 4 and 6, Wang teaches the first reactor effluent is cooled by indirect heat exchange comprises heating the second hydrocarbon portion in a cross exchange ([0091]).

Regarding claim 7, Wang teaches the catalyst zone comprises catalyst tubes ([0091]; Fig. 1).

Regarding claim 8, Wang teaches the second hydrocarbon portion is supplied to a tube side of the reforming exchanger 30 and passed through the catalyst tubes ([0091]; Fig. 1).

Regarding claim 9, Wang teaches the first reactor effluent is supplied to a shell side inlet of the reforming exchanger ([0090]; Fig. 1).

Regarding claim 10, Wang teaches the shell side inlet is adjacent to an outlet end of the catalyst tubes (Fig. 1).

Regarding claim 11, Wang teaches the first and second hydrocarbon portions are supplied in a 68/32 weight ratio.

Regarding claims 12 and 13, Wang does not explicitly teach the first and second hydrocarbon portions are supplied in a weight ratio from 40:60 to 60:40 or 95:5 to 80:20, however it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the first and second hydrocarbon portions according to process requirements as such a modification is a result effective variable, where one skilled in the art would recognize to optimize a process variable by routine experimentation, for example in this case, to control the hydrocarbon portions depending on desirability of quantity of carbon monoxide in the syngas produced from the first portion of the hydrocarbon subjected to partial oxidation ([0009]). See In re Boesch, 617 F.2d 272, 276 (CCPA 1980); MPEP 2144.05.

Regarding claims 22 and 23, Wang teaches a conventional partial oxidation reactor ([0090]) and as understood and admitted by the applicant, conventional POX reactors are free flow, unpacked, non-catalytic reactors (Applicant's Spec. at [0003]).

Regarding claim 24, Wang teaches the first reactor effluent is greater than 1100 C ([0089]).

Regarding claim 25, Wang teaches a process for preparing syngas comprising partially oxidizing a first portion of hydrocarbon 4 with oxygen 18 in a partial oxidation reactor 12 at a temperature above 1100 C; cooling the first reactor effluent; supplying the effluent to a reforming exchanger; passing a second hydrocarbon portion 6 with steam 32 though the catalyst zone of a reforming exchanger 30; discharging the second reactor effluent from the catalyst zone to form an admixture with the first reactor effluent; passing the admixture across the catalyst zone in indirect heat exchange therewith to cool the admixture and heat the catalyst zone; collecting the cooled admixture from the from the reforming exchanger ([0089-0092]; Fig. 1).

Wang further teaches that it is advantageous to reduce the temperature of the exothermically generated syngas ([0040-0042]), but does not teach cooling the first reactor effluent to 650 –1000 C. However it would have been obvious to one of ordinary skill in the art at the time of the invention to cool the first reactor effluent to 650 –1000 C as such a modification is a result effective variable, where one skilled in the art would recognize to optimize a process variable by routine experimentation, for example in this case, to control the generated syngas temperature to avoid mechanical integrity problems and improve process operability by reducing the temperature of exothermically generated syngas prior to further processing ([0042]). See In re Boesch, 617 F.2d 272, 276 (CCPA 1980); MPEP 2144.05.

Regarding claim 26, Wang teaches direct heat exchange with water introduced into the first reactor effluent [0040].

Regarding claims 27 and 29, Wang teaches the first reactor effluent is further cooled by indirect heat exchange ([0091]).

Regarding claim 28 and 30, Wang teaches the first reactor effluent is cooled by indirect heat exchange comprises heating the second hydrocarbon portion in a cross exchange ([0091]).

Regarding claim 31, Wang teaches the catalyst zone comprises catalyst tubes ([0091]; Fig. 1).

Regarding claim 32, Wang teaches the second hydrocarbon portion is supplied to a tube side of the reforming exchanger 30 and passed through the catalyst tubes ([0091]; Fig. 1).

Regarding claim 33, Wang teaches the first reactor effluent is supplied to a shell side inlet of the reforming exchanger ([0090]; Fig. 1).

Regarding claim 34, Wang teaches the shell side inlet is adjacent to an outlet end of the catalyst tubes (Fig. 1).

Regarding claim 35, Wang teaches the first and second hydrocarbon portions are supplied in a 68/32 weight ratio.

Regarding claims 36 and 37, Wang does not explicitly teach the first and second hydrocarbon portions are supplied in a weight ratio from 40:60 to 60:40 or 95:5 to 80:20, however it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the first and second hydrocarbon portions according to process

requirements as such a modification is a result effective variable, where one skilled in the art would recognize to optimize a process variable by routine experimentation, for example in this case, to control the hydrocarbon portions depending on desirability of quantity of carbon monoxide in the syngas produced from the first portion of the hydrocarbon subjected to partial oxidation ([0009]). See In re Boesch, 617 F.2d 272, 276 (CCPA 1980); MPEP 2144.05.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vinit H. Patel whose telephone number is (571) 272-2071. The examiner can normally be reached on 9:00 am - 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

VHP

ALEXA DOROSHENK NECKEL
PRIMARY EXAMINER